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BIOLOGICAL EVALUATION OF THE PROPOSED DEADWOOD, COATS CREEK, MIDDLE CREEK, AND DOGETT PROGENY TEST SITES, KLAMATH NATIONAL FOREST

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ABSTRACT

Four Regional Tree Improvement Progeny Test sites on the Klamath National Forest were examined for insect and disease problems. Black stain root disease was present on ponderosa pine at the Deadwood and Coats Creek sites. The disease should be considered during and after establishment of the Coats Creek site. Because ponderosa pine are to be planted, stump removal and double-discing are essential to minimize infection. Buffer strips around the sites would reduce the risk of dwarf mistletoe infections and the risk of black stain spreading into the sites. Other diseases noted were of minor significance.

INTRODUCTION

Four proposed Progeny Test sites - Deadwood and Coats Creek on the Scott River Ranger District, and Middle Creek and Doggett on the Oak Knoll Ranger District - were examined by us on September 14, 1983. We were accompanied by Chuck Frank of the North Zone Tree Improvement Project. The objective of the examinations was to determine the presence of, or potential for, insect and disease problems which could affect the objectives of the Regional Tree Improvement Program. Observations of the four sites and a discussion follow.

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OBSERVATIONS

Deadwood

The approximately 14 acre site on the Scott River District (T.45N., R.8W., Sec. 17) is within a stand composed of ponderosa pine, sugar pine, and scattered incense-cedar. The ponderosa pine have been dying over a period of years, with fading, recently dead, and old dead trees scattered or grouped throughout the site. Site preparation is scheduled for this fall or next year. The site will be clearcut, stumps pulled, and then disced in two directions. Douglas-fir seedlings are to be planted 3 or 4 years from now.

Black stain root disease, caused by Ceratocystis wagneri, was observed on fading and recently dead ponderosa pine throughout the site. A blister rust canker, caused by Cronartium ribicola, was present on one branch of a sugar pine seedling.

Coats Creek

The 16 acre site on the Scott River District (T.45N., R.9W., Sec. 18) is within a stand of ponderosa pine and Douglas-fir. As at the Deadwood site, ponderosa pine have been dying over a period of years. Patches of snags are common at the northwest boundary of the site. Scheduled site preparation is similar to the Deadwood site, with clearcutting, stump removal, and double-discing planned for this fall. Because many of the Douglas-fir presently on the site appear of low quality, with short internodes, off-color foliage, and rounded crowns, ponderosa pines will be planted on the site. Planting is scheduled for 3 to 5 years from now.

The cause of ponderosa pine mortality was black stain root disease. The disease was not found on Douglas-fir in the area. Other diseases noted of potential significance included western dwarf mistletoe (Arceuthobium campylopodum) on ponderosa pine and dwarf mistletoe (A. douglasii) on Douglas-fir.

Middle Creek

The site (T47N., R.10W., Sec. 33, Oak Knoll District) is adjacent to a current timber sale (Coyote) and within a stand of essentially old growth ponderosa pine, Douglas-fir, sugar pine, and incense-cedar. Site preparation (clearcutting, stump removal and discing) is planned for next summer. The site will be planted to ponderosa pine 2 to 3 years after site preparation.

Pest problems noted included dwarf mistletoe on Douglas-fir, and decay, particularly Fomes pini, in Douglas-fir. White pine blister rust was present on one sugar pine sapling within the site and common in the

stand across the road. Black stain root disease was not observed. However, the disease has been reported on ponderosa pine in the Middle Creek Ridge area (T.46N., R.10W., Sections 3, 4 and 5; T.47N., R.10W., Sections 32, 33 and 34).

Doggett

The proposed Doggett site on the Oak Knoll District (T.47N., R.9W., Sec. 32) is within a stand composed of a ponderosa pine plantation at the road and a mixture of ponderosa pine, Douglas-fir, sugar pine, and some white fir further in. The site is to be planted with Douglas-fir in the spring of 1985, one year after site preparation next summer.

The only disease noted was blister rust on a few sugar pine saplings. Douglas-fir dwarf mistletoe was not observed in or near the proposed site.

DISCUSSION

Black stain root disease should be considered during and after establishment of the progeny test sites at Coats Creek and possibly the Middle Creek site. The fungus causing the disease spreads from tree to tree through root contacts and by growing a few centimeters directly through the soil. Spread of disease into new areas is probably a result of root-feeding insects carrying spores from an infected tree to an uninfected tree. Observations and experimental data indicate that several strains of the fungus exist that are relatively host-specific. The ponderosa pine strain attacks ponderosa, Jeffrey and lodgepole pines, but not Douglas-fir. The Douglas-fir strain attacks only Douglas-fir. Even though the fungus spreads through root systems of living trees, it rarely spreads, or survives, in roots after the tree dies. The fungus persists for only a few years in wood of dead trees.

The black stain now present on ponderosa pine at the Deadwood site should not be a problem because Douglas-fir seedlings are to be planted and the fungus is host-specific. Furthermore, the removal of stumps followed by double-discing should expose all or most infected pine wood, and the fungus will die out in a few years if ponderosa pine are kept off the site.

Because black stain is now infecting ponderosa pine at the Coats Creek site and ponderosa pine will be planted there, special precautions need to be taken. Stump removal and removal of as much host material as possible by double-discing should eliminate the fungus. However, the generalization that the fungus persists for only a few years in wood of dead trees has not been experimentally demonstrated, and the statement that host species can be replanted in centers several years after all infected trees are felled is only a guideline. The longer the site is left fallow after clear cutting and double-discing before ponderosa pine are planted, the less the risk that the planted seedlings will become infected. The planned 3 to 5 years between clearing and planting should be sufficient. The creation of a 75 foot buffer strip around the margin

of the proposed site by removal of all ponderosa pine would prevent local spread via root contact from infected trees outside the site. The buffer strip would also effectively limit the spread of western dwarf mistletoe from ponderosa pines outside the site to the planted ponderosa pine.

Black stain has been reported on ponderosa pine near the Middle Creek site. Stump removal and discing should reduce the risk of any infection of planted ponderosa pine from black stain if the disease is present on the site.